



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/509,688	03/14/2005	Keiji Yamada	259593US90PCT	6699
22850	7590	03/17/2009		
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314				
EXAMINER				
YOUNG, NATASHA E				
ART UNIT		PAPER NUMBER		
1797				
NOTIFICATION DATE		DELIVERY MODE		
03/17/2009		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com
oblonpat@oblon.com
jgardner@oblon.com

Office Action Summary

Application No.

10/509,688

Applicant(s)

YAMADA, KEIJI

Examiner

NATASHA YOUNG

Art Unit

1797

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 February 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 7-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 7-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on February 23, 2009 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-4 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ichikawa et al (US 5,595,581) in view of Ohno et al (US 6,669,751 B1).

Regarding claim 1, Ichikawa et al discloses a honeycomb filter for purifying exhaust gases (see Abstract) comprising: a columnar body comprising a plurality of porous ceramic members, each of said porous ceramic members having a plurality of through holes extending in parallel with one another in a length direction of said columnar body and a wall portion interposed between said through holes, said wall portion being configured to collect particles in exhaust gases (see Abstract, column 4, lines 44-54; column 6, lines 13-24; and figures 1a, 1b, 2 and 3), since the sealer, ceramic fiber and cordierite, may be employed and the honeycomb structure is made of the same material as the sealing member, and plurality of plugs filling ones of said through holes at one end of said columnar body and other ones of said through holes at the other end of said columnar body.

Ichikawa et al does not disclose each of said porous ceramic members comprising silicon carbide, said columnar body has a porosity which is in a range from 20 to 80 %, said plugs have a porosity which is 90% or less, or said porosity of said plugs is set to 0.15 to 4.0 times of said porosity of said columnar body, and a plurality of plugs comprising silicon carbide.

However, Ichikawa et al disclose the porosity of the first sealing member is desired to be 110-140% of the porosity of the honeycomb structure, the porosity of the honeycomb filter and the first sealing member is 45% (see column 4, lines 4-33 and column 6, lines 13-24), (see column 2, lines 32-37 and Tables 1-2, where, second

sealing member is 40 to 65 %), such that said porosity of said plugs is set to 0.15 to 4.0 times of said porosity of said columnar.

Ichikawa et al does not disclose a segmented honeycomb filter.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a segmented honeycomb filter since it was known in the art that honeycomb filter assemblies are less vulnerable to thermal impacts and as a result prevent breakage resulting from cracks (see MPEP 2144.03 (A-E)).

Ohno et al discloses a porous ceramic honeycomb filter made of silicon carbide and having an average porosity of 30 to 50%, a plurality of plugs (14) comprising silicon carbide (see column 3, lines 41-45 and column 5, lines 35-61), and a honeycomb filter wherein said columnar body comprises a sealing material later combining said porous members (see column 5, lines 30-51).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Ichikawa et al with the teachings of Ohno et al such that of said porous ceramic members comprising silicon carbide, said columnar body has a porosity which is in a range from 20 to 80 %, said plugs have a porosity which is 90% or less, or said porosity of said plugs is set to 0.15 to 4.0 times of said porosity of said columnar body, and a plurality of plugs comprising silicon carbide in order to provide a honeycomb filter having small pressure loss and superior mechanical strength (see Ohno et al column 2, lines 60-62) and for heat resistance, mechanical strength, a high accumulating efficiency, chemical stability, and low pressure loss (see Ohno et al column 1, lines 25-36).

Regarding claim 2, Ichikawa et al does not disclose a honeycomb filter wherein said porosity of said plugs is set to 0.25 to 1.5 times of said porosity of said columnar body.

However, Ichikawa et al disclose the porosity of the first sealing member is desired to be 110-140% of the porosity of the honeycomb structure, the porosity of the honeycomb filter and the first sealing member is 45% (see column 4, lines 4-33 and column 6, lines 13-24), (see column 2, lines 32-37 and Tables 1-2, where, second sealing member is 40 to 65 %) such that said porosity of said plugs is set to 0.25 to 1.5 times of said porosity of said columnar.

Regarding claim 3, Ichikawa et al does not disclose a honeycomb filter further comprising a catalyst supported by said columnar body.

Ohno et al discloses a honeycomb filter comprising a catalyst supported by said columnar body (see column 5, lines 42-61).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Ichikawa et al with the teachings of Ohno et al for the predictable result of enhanced purification of exhaust gases.

Regarding claim 4, Ichikawa et al does not disclose a honeycomb filter further comprising a catalyst supporting film provided over a surface of said columnar body.

Ohno et al discloses a honeycomb filter further comprising a catalyst supporting film provided over a surface of said columnar body (see column 5, lines 42-61).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Ichikawa et al with the teachings of Ohno et al for the predictable result of enhanced purification of exhaust gases.

Regarding claim 7, Ichikawa et al does not disclose a honeycomb filter wherein said columnar body comprises a sealing material layer combining said porous members.

Ichikawa et al does not disclose a segmented honeycomb filter.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a segmented honeycomb filter since it was known in the art that honeycomb filter assemblies are less vulnerable to thermal impacts and as a result prevent breakage resulting from cracks (see MPEP 2144.03 (A-E)).

Ohno et al discloses a honeycomb filter wherein said columnar body comprises a sealing material layer combining said porous members (see column 5, lines 30-51).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Ichikawa et al with the teachings of Ohno et al to provide a honeycomb filter having small pressure loss and superior mechanical strength (see Ohno et al column 2, lines 60-62).

Claims 8-9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ichikawa et al (US 5,595,581) and Ohno et al (US 6,669,751 B1) as applied to claim 1 above, and further in view of Abe et al (US 6,869,573 B2).

Regarding claims 8-9, Ichikawa et al discloses a honeycomb filter further comprising a casing (see figures 2-3).

Ichikawa et al does not disclose a honeycomb filter further comprising: a casing covering a peripheral portion of said columnar body; a holding sealing material structure provided between said columnar body and said casing; and a heating device positioned on an inlet side of said columnar body and configured to heat the exhaust gases such that said columnar body is heated to burn and remove the particles accumulated in said wall portion and configured to generate heat such that said columnar body is heated to burn and remove the particles accumulated in said wall portion.

Ohno et al discloses a honeycomb filter further comprising: a casing (8) covering a peripheral portion of said columnar body (9) and a holding sealing material structure (10) provided between said columnar body (9) and said casing (8) (see column 5, lines 4-23 and figure 4).

Ohno et al does not disclose a heating device positioned on an inlet side of said columnar body and configured to heat the exhaust gases such that said columnar body is heated to burn and remove the particles accumulated in said wall portion and configured to generate heat such that said columnar body is heated to burn and remove the particles accumulated in said wall portion.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teaching Ichikawa et al with the teachings of Ohno et al such that a honeycomb filter further comprising: a casing covering a peripheral portion of said columnar body and a holding sealing material structure provided between said columnar body and said casing in order to prevent displacement of the ceramic filter assembly (see Ohno et al column 5, lines 9-23).

Abe et al discloses a heating device (2) positioned on an inlet side of said columnar body (3) and configured to heat the exhaust gases such that said columnar body is heated to burn and remove the particles accumulated in said wall portion and configured to generate heat such that said columnar body (9) is heated to burn and remove the particles accumulated in said wall portion (see column 4, lines 42-62 and figures 1a-b).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teaching Ichikawa et al and of Ohno et al with the teachings of Abe et al such that a honeycomb filter further comprising: a heating device positioned on an inlet side of said columnar body and configured to heat the exhaust gases such that said columnar body is heated to burn and remove the particles accumulated in said wall portion and configured to generate heat such that said columnar body is heated to burn and remove the particles accumulated in said wall portion in order to heat the catalytic converters (or filters) when they are not sufficiently heated as in the start-up of an automobile (see Abe et al column 1, lines 30-34).

Regarding claim 11, Ichikawa et al does not disclose wherein said heat generating device comprises an oxidizing catalyst.

Abe et al discloses the honeycomb heater may or may not contain a catalyst supported thereon (see column 4, lines 55-62) and a noble metal such as Pt, Pd, Rh or the like is supported on the zeolite and/or resistant oxide (see column 5, lines 42-52), where the noble metal are oxidizing catalysts.

It would have been obvious to one having ordinary skill in the art at the time the invention to modify the teachings of Ichikawa et al and of Ohno et al with the teachings of Abe et al such that said heat generating device comprises an oxidizing catalyst in order to improve removal of harmful components in automobile exhaust gases.

Claims 10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ichikawa et al (US 5,595,581) and Ohno et al (US 6,669,751 B1) as applied to claim 1 above, and further in view of Whittenberger (US 5,140,813).

Regarding claim 10, Ichikawa et al discloses a honeycomb filter further comprising a casing (see figures 2-3).

Ichikawa et al does not disclose a honeycomb filter further comprising: a casing covering a peripheral portion of said columnar body; a holding sealing material structure provided between said columnar body and said casing; and a heat generating device supported by said columnar body and configured to generate heat such that said columnar body is heated to burn and remove the particles accumulated in said wall portion.

Ohno et al discloses a honeycomb filter further comprising: a casing (8) covering a peripheral portion of said columnar body (9) and a holding sealing material structure (10) provided between said columnar body (9) and said casing (8) (see column 5, lines 4-23 and figure 4).

Ohno et al does not disclose a heat generating device supported by said columnar body and configured to generate heat such that said columnar body is heated to burn and remove the particles accumulated in said wall portion.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teaching Ichikawa et al with the teachings of Ohno et al such that a honeycomb filter further comprising: a casing covering a peripheral portion of said columnar body and a holding sealing material structure provided between said columnar body and said casing in order to prevent displacement of the ceramic filter assembly (see Ohno et al column 5, lines 9-23).

Whittenberger discloses a heat generating device (18) supported by said columnar body (12) and configured to generate heat such that said columnar body (12) is heated to burn and remove the particles accumulated in said wall portion (see figure 1; column 3, lines 43-48; and column 4, line 37 through column 5, line 40).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teaching Ichikawa et al and of Ohno et al with the teachings of Whittenberger such that a honeycomb filter further comprising: a heat generating device supported by said columnar body and configured to generate heat such that said columnar body is heated to burn and remove the particles accumulated in said wall portion in order to prevent the production of pollution (see Whittenberger column 1, lines 15-45).

Regarding claim 12, Ichikawa et al does not disclose a honeycomb filter wherein said heat generating device comprises an oxidizing catalyst.

Whittenberger discloses said heat generating device comprises an oxidizing catalyst (see column 4, line 52 through column 5, lines 40), where the noble metals are oxidizing catalysts.

It would have been obvious to one having ordinary skill in the art at the time the invention to modify the teachings of Ichikawa et al and of Ohno et al with the teachings of Whittenberger such that said heat generating device comprises an oxidizing catalyst in order to improve removal of harmful components in automobile exhaust gases.

Response to Arguments

Applicant's arguments filed February 23, 2009 have been fully considered but they are not persuasive.

The applicant argues that the honeycomb filter of claim 1 exhibits unexpected results of improved thermal resistance and mechanical strength, and a thermal stress exerted during its use is dispersed among the porous ceramic members and the columnar body is significantly less susceptible to cracking caused by the thermal expansion and thermal stress due to the repetition of a high temperature regeneration process during which the particles collected on the wall portion are burned by a heated gas (see Remarks, page 6).

The examiner does not believe the results of the improvements are unexpected.

Ichikawa et al discloses an exhaust gas filter, which has an excellent efficiency in collecting fine particles contained in exhaust gases, without increasing pressure losses (see column 1, line 64 through column 2, line 3).

Ohno et al discloses a ceramic filter having an improved exhaust gas processing efficiency, superior strength, and having small pressure loss and superior mechanical strength (see column 2, lines 53-62) and the reason for employing sintered porous

silicon carbide is because it is advantageous especially in that it has superior heat resistance and heat conductance (see column 5, lines 34-40) such that improved thermal resistance and mechanical strength, and a thermal stress exerted during its use is dispersed among the porous ceramic members and the columnar body is significantly less susceptible to cracking caused by the thermal expansion and thermal stress due to the repetition of a high temperature regeneration process during which the particles collected on the wall portion are burned by a heated gas are expected results.

The applicant argues that neither Ichikawa et al nor Ohno et al recognizes the gap formation between the columnar body and the plugs or the cracking caused thereby (see Remarks, page 6).

The examiner agrees, but points out that is not part of the claimed invention and is an occurrence in a columnar body being plugged and would be inherent to any columnar body that is plugged.

The applicant argues that it would not have been obvious to modify the teachings of Ichikawa et al with the teachings of Ohno et al because Ohno et al teaches away from Ichikawa et al, since Ohno et al teaches increasing pressure loss (see Remarks, page 7)

The examiner disagrees.

Ichikawa et al discloses not increasing pressure loss (see column 1, line 64 through column 2, line 3).

Ohno et al discloses small pressure loss (see column 2, lines 60-62).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NATASHA YOUNG whose telephone number is 571-270-3163. The examiner can normally be reached on Mon-Thurs 7:30 am-6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter Griffin can be reached on 571-272-1447. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/N. Y./
Examiner, Art Unit 1797

/Walter D. Griffin/
Supervisory Patent Examiner, Art Unit 1797